University of Agronomic Sciences and Veterinary Medicine

Faculty of Horticulture – București

USAMV BUCURESTI
CENTRUL DE CERCETARE PENTRU STUDIUL CALITATII PRODUSELOR AGROALIMENTARE

Dynamics of fruit branches at some new peach and nectarines cultivars under Vertical Axis and Trident canopies

Alexandru Bucur
Ana Butcaru
Cosmin Mihai
Florin Stănică

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Material and methods

Location:

Experimental Field of the Faculty of Horticulture in Bucharest

Biological material:

- **14 peach cultivars**
- **16 nectarine cultivars**
- **planted in early spring of 2017**

Material and methods

Location:

Experimental Field of the Faculty of Horticulture in Bucharest

Biological material:

- 14 peach cultivars: 'Cardinal'/'Mir29C', 'Gladys'/'GF677', 'Lucius'/'GF677', 'Nabby'/'GF677', 'Red Top'/'Mir29C', 'Royal Glory'/'Adesoto', 'Royal Jim'/'Adesoto', 'Royal Majestic'/'Adesoto', 'Royal Summer'/'GF677', 'Royal Summer'/'SJA', 'Sugar Time'/'Adesoto', 'Sweet Dream'/'GF677', 'Sweet Henry'/'Adesoto', 'Sweet Ivan'/'GF677' and 'Sweet Juana'/'GF677'

- 16 nectarine cultivars: 'Big Bang'/'GF677', 'Big Fire'/'GF677', 'Big Top'/'GF677', 'Caldesi 2000'/'SJA' 'Delta'/'M29C', 'Early Sun Grand'/'SJA', 'Guerriera'/'SJA', 'Honey Late'/'SJA', 'Honey Royale'/'GF677', 'Maria Anna'/'SJA', 'Nectabelle'/'GF677','Nectagrand1'/'SJA','Nectagrand4'/'SJA', 'Nectaross'/'SJA' 'Nectareine'/'Adesoto' and 'Stark Red Gold'/'SJA'

Material and methods

Planting systems:

-Vertical Axis – 4.0 x 1.5 m
- **1,666 trees/ha**
- **1,666 axis/ha**

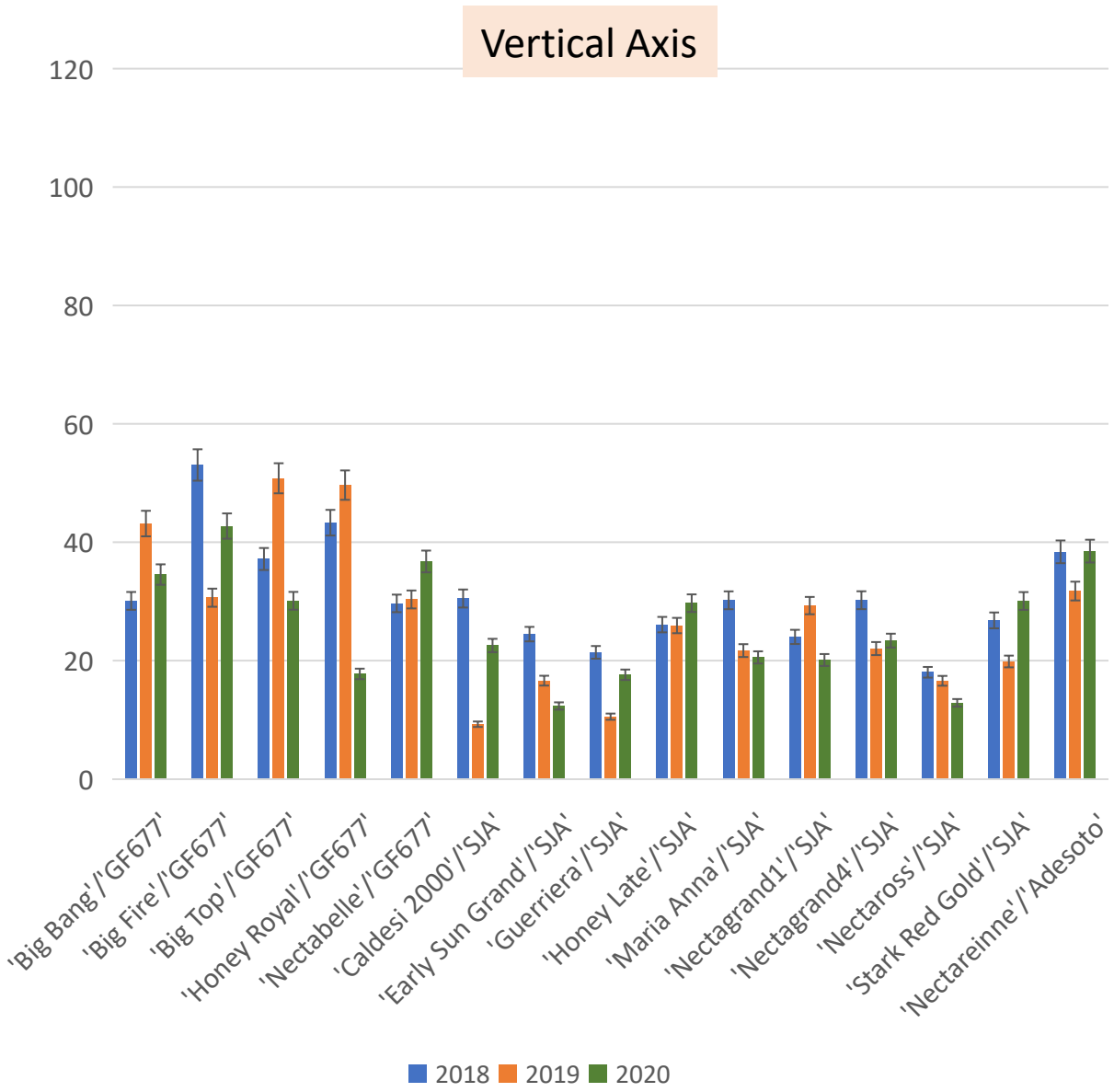
-Trident – 4.0 x 2.0 m
- **1,250 trees/ha**
- **3,750 axis/ha**

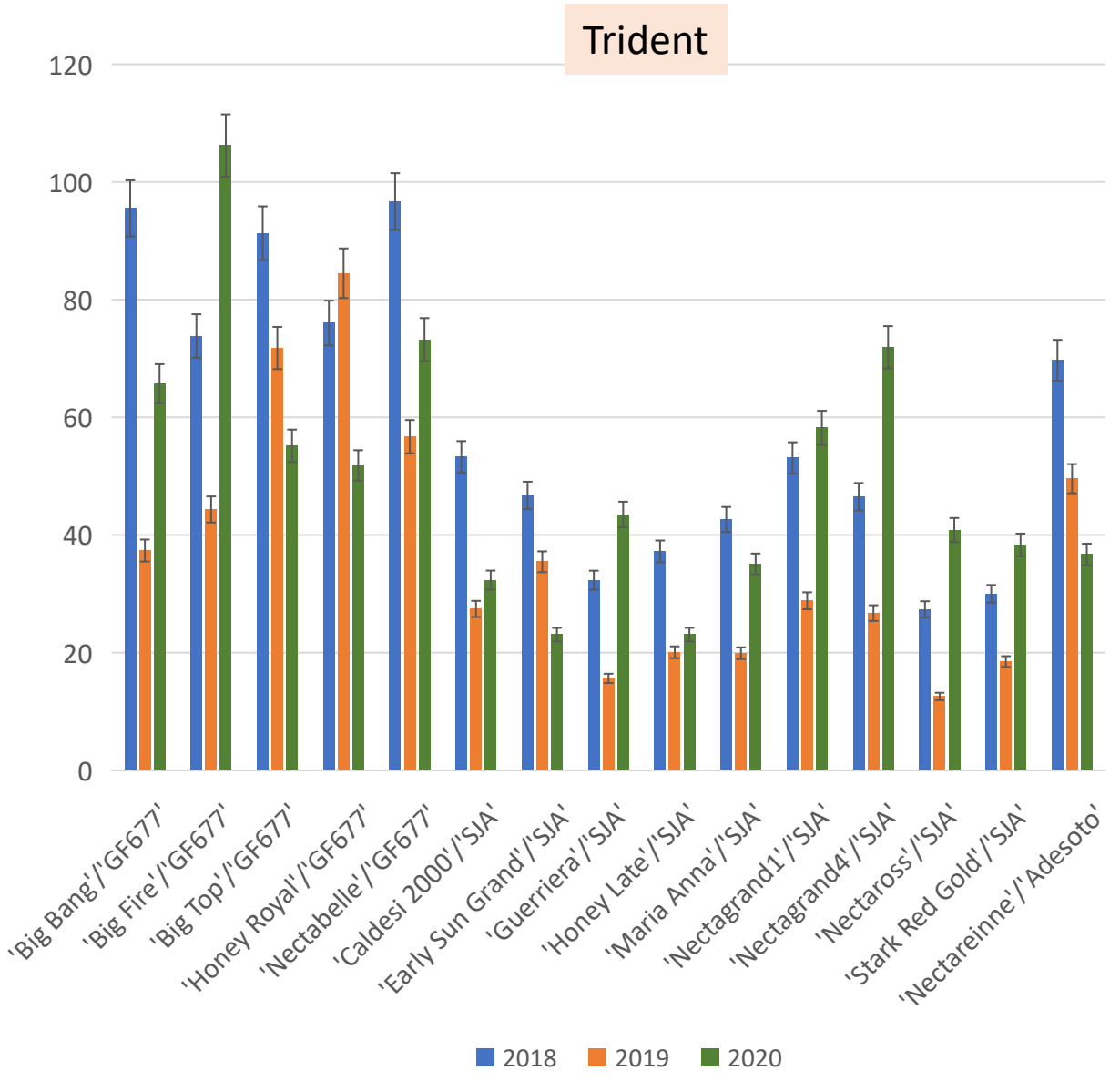
Material and methods

Measurements:

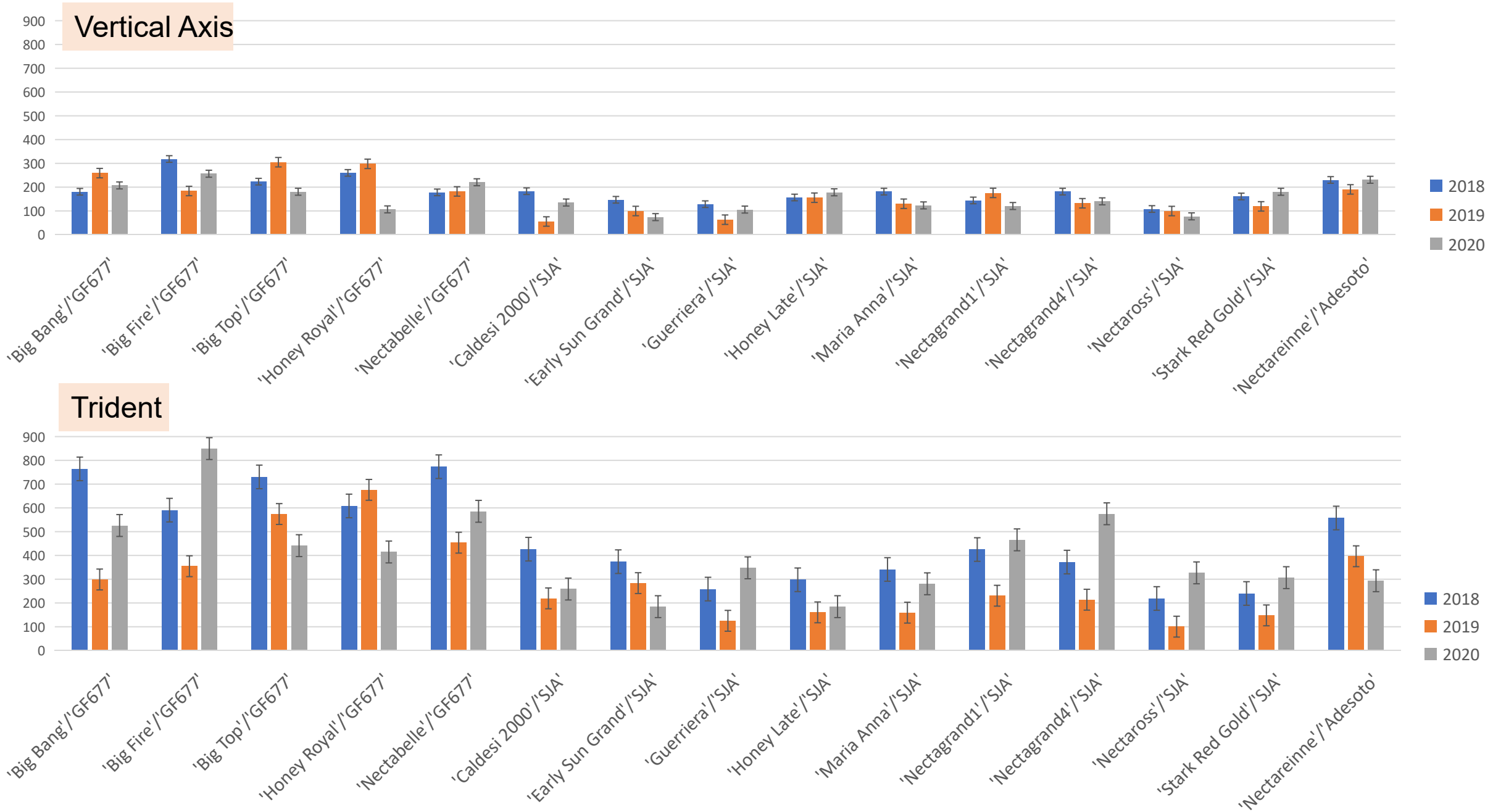
- number and average length of fruit branches (cm) per type, per tree and per ha
- proleptic and sylectic shoots
- total growth m/tree and m/ha
- dynamics of fruit branches from 2018 to 2020

Total annual growth (m/tree) for nectarine cultivars (2018-2020)

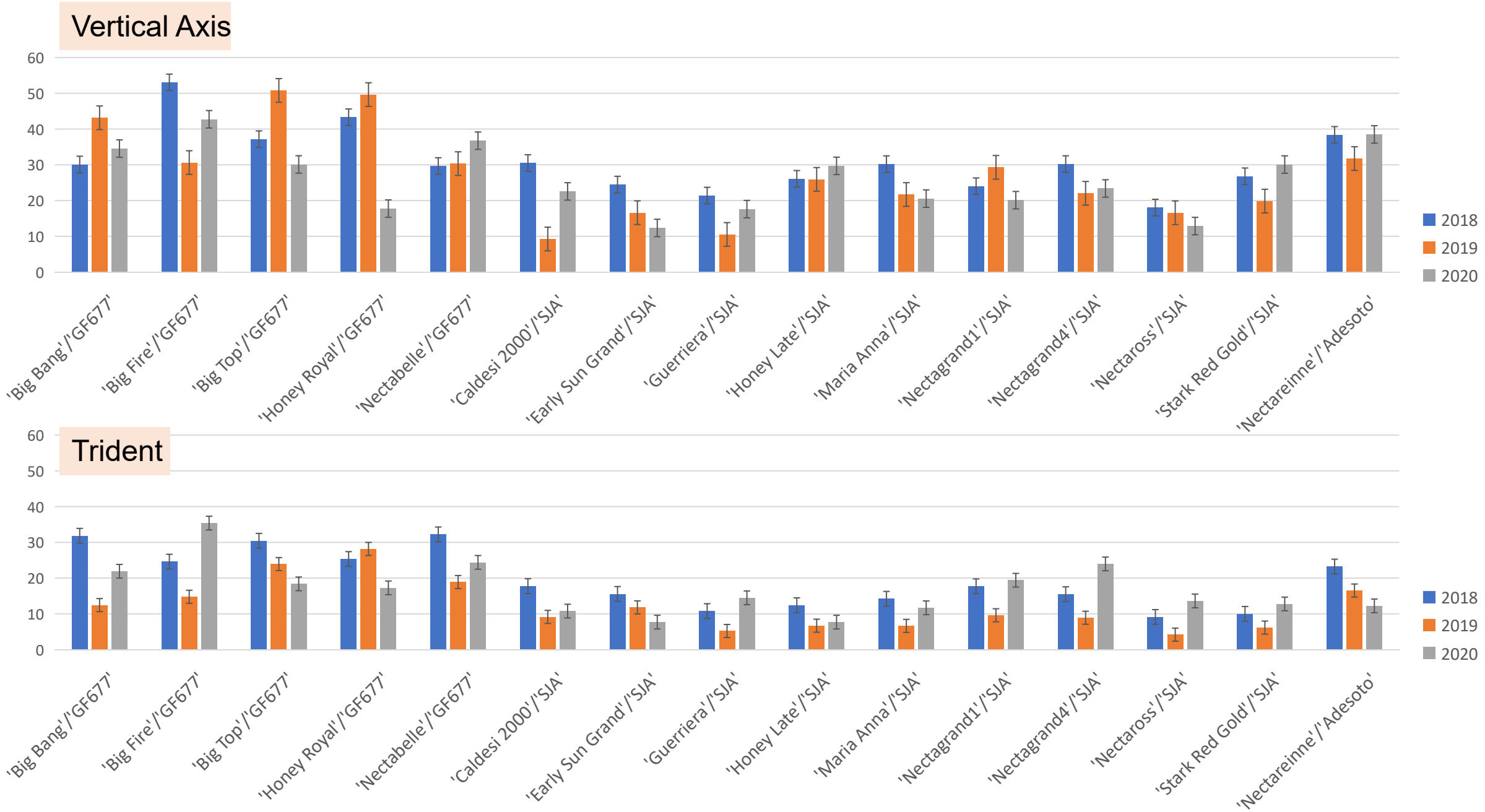




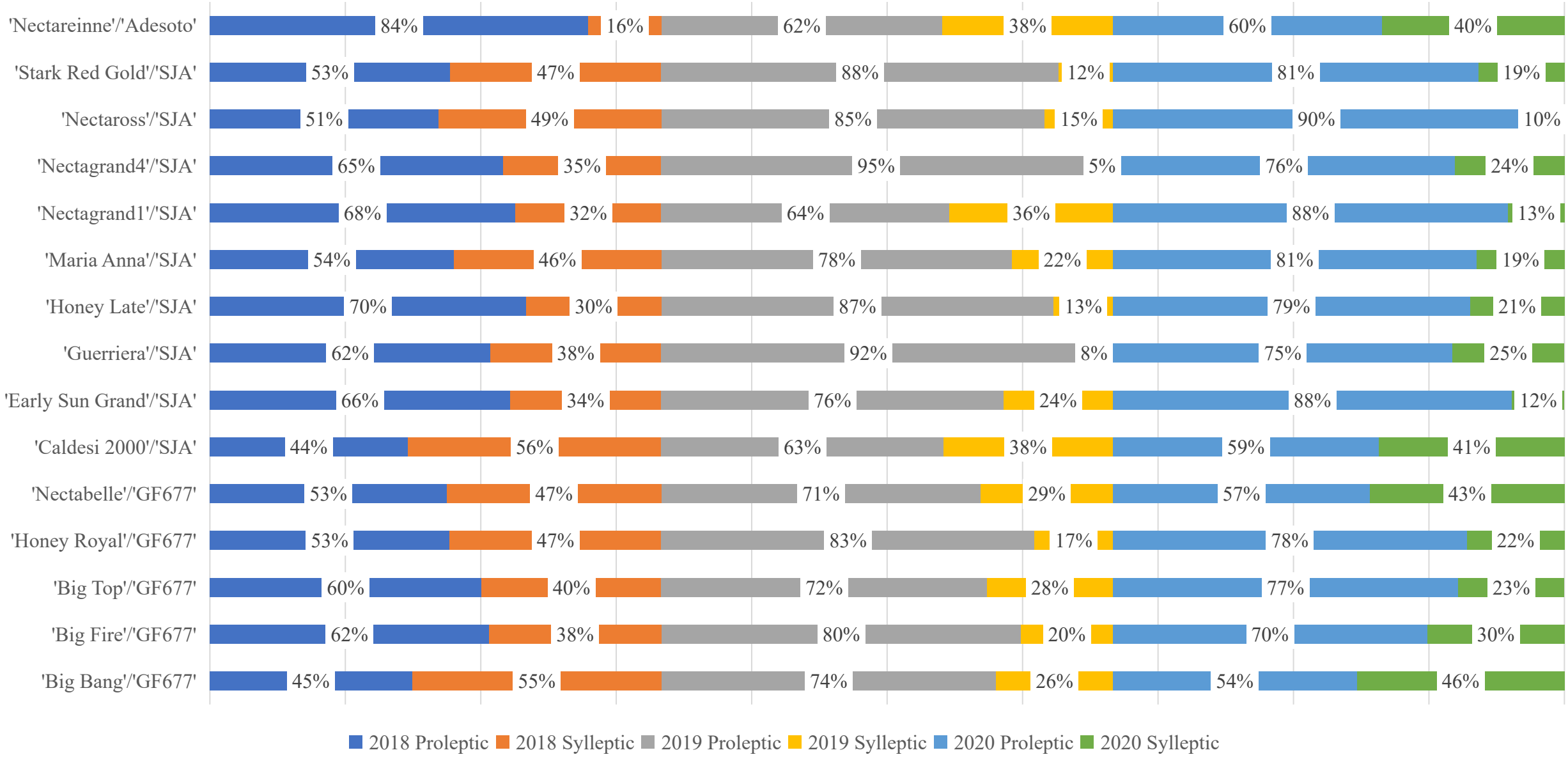
Total annual growth (m/ha) for nectarine cultivars (2018-2020)



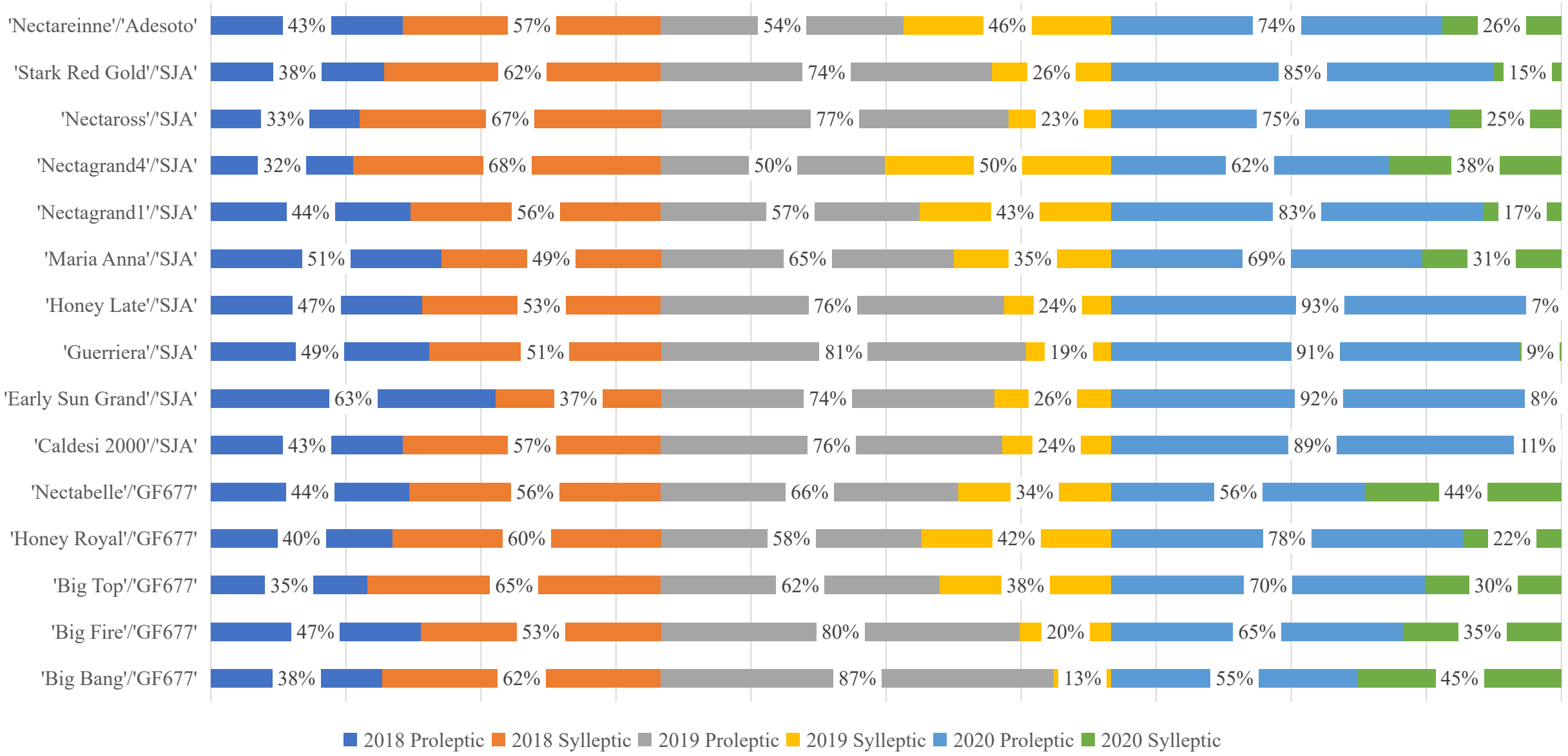
Total annual growth (m/axis) for nectarine cultivars (2018-2020)



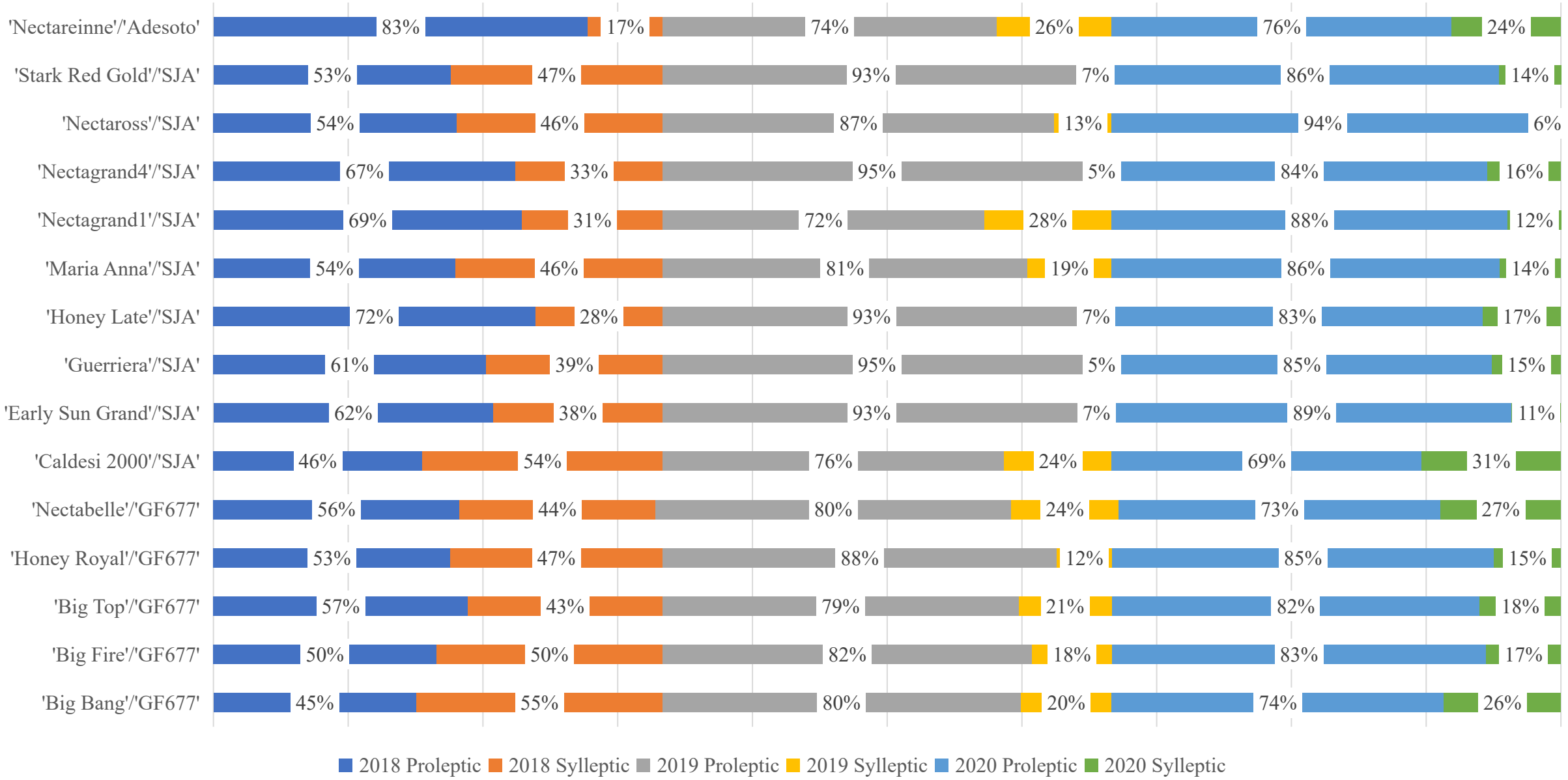
Percentage of proleptic and sylleptic shoots (%) at nectarine cultivars (2018-2020, Vertical Axis)



Percentage of proleptic and sylleptic shoots (%) at nectarine cultivars (2018-2020, Trident)



Percentage of proleptic / sylleptic shoots length (%) at nectarine cultivars (2018-2020, Vertical Axis)


'Nectareinne'/'Adesoto' 83% 17% 74% 26% 76% 24%
'Stark Red Gold'/'SJA' 53% 47% 93% 7% 86% 14%
'Nectaross'/'SJA' 54% 46% 87% 13% 94% 6%
'Nectagrand4'/'SJA' 67% 33% 95% 5% 84% 16%
'Nectagrand1'/'SJA' 69% 31% 72% 28% 88% 12%
'Maria Anna'/'SJA' 54% 46% 81% 19% 86% 14%
'Honey Late'/'SJA' 72% 28% 93% 7% 83% 17%
'Guerriera'/'SJA' 61% 39% 95% 5% 85% 15%
'Early Sun Grand'/'SJA' 62% 38% 93% 7% 89% 11%
'Caldesi 2000'/'SJA' 46% 54% 76% 24% 69% 31%
'Nectabelle'/'GF677' 56% 44% 80% 24% 73% 27%
'Honey Royal'/'GF677' 53% 47% 88% 12% 85% 15%
'Big Top'/'GF677' 57% 43% 79% 21% 82% 18%
'Big Fire'/'GF677' 50% 50% 82% 18% 83% 17%
'Big Bang'/'GF677' 45% 55% 80% 20% 74% 26%
2018 Proleptic
2018 Sylleptic
2019 Proleptic
2019 Sylleptic
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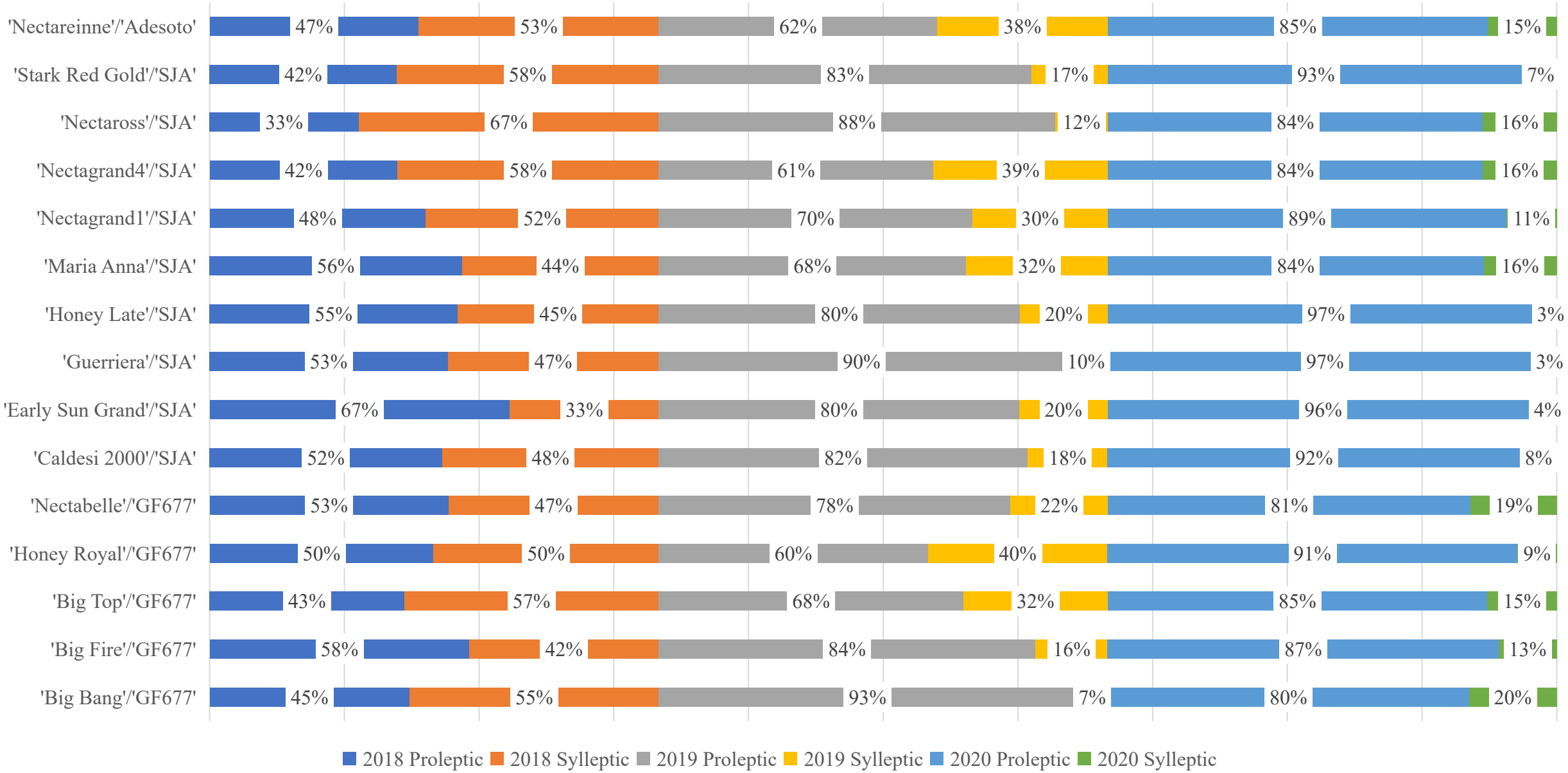
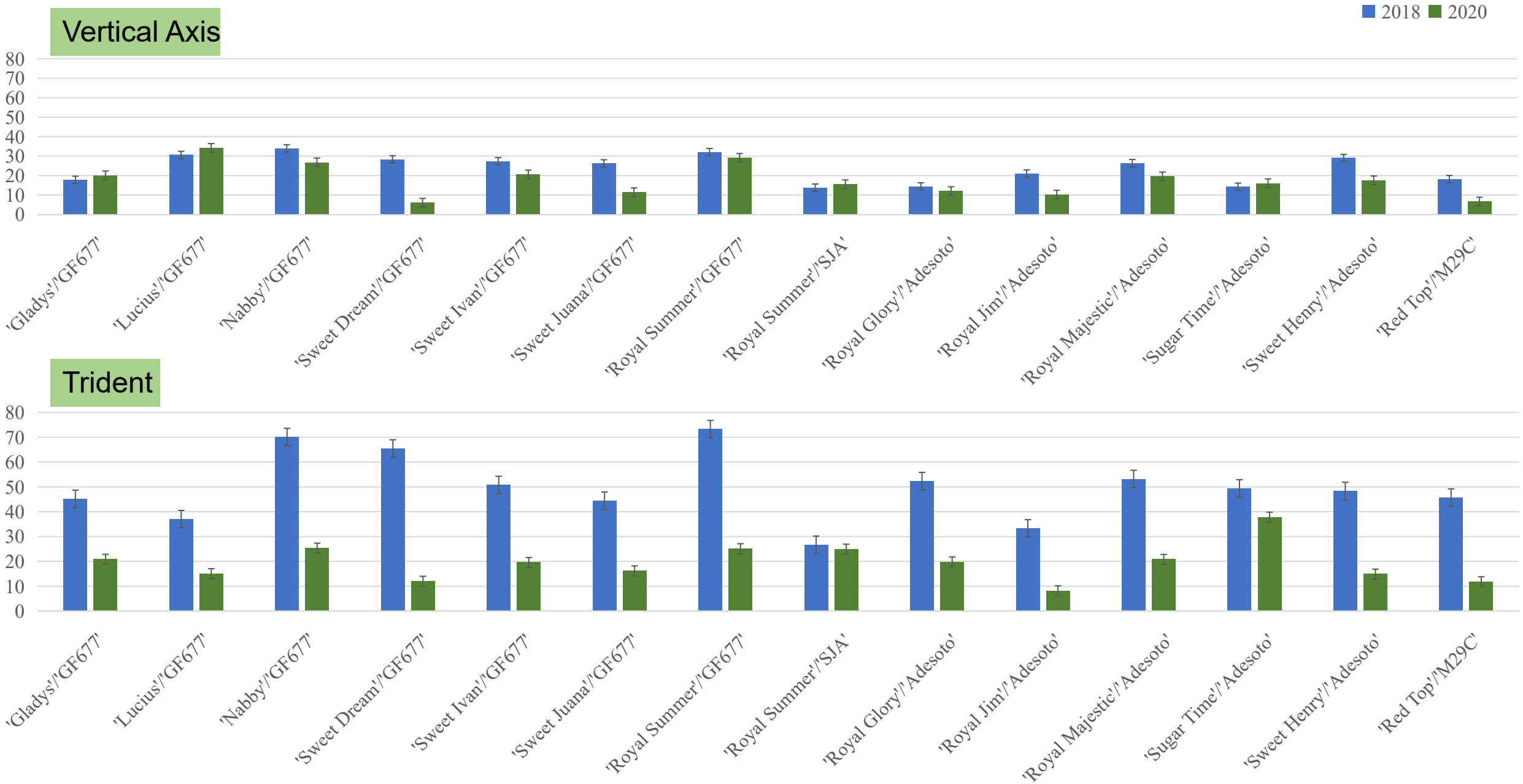
2020 Sylleptic

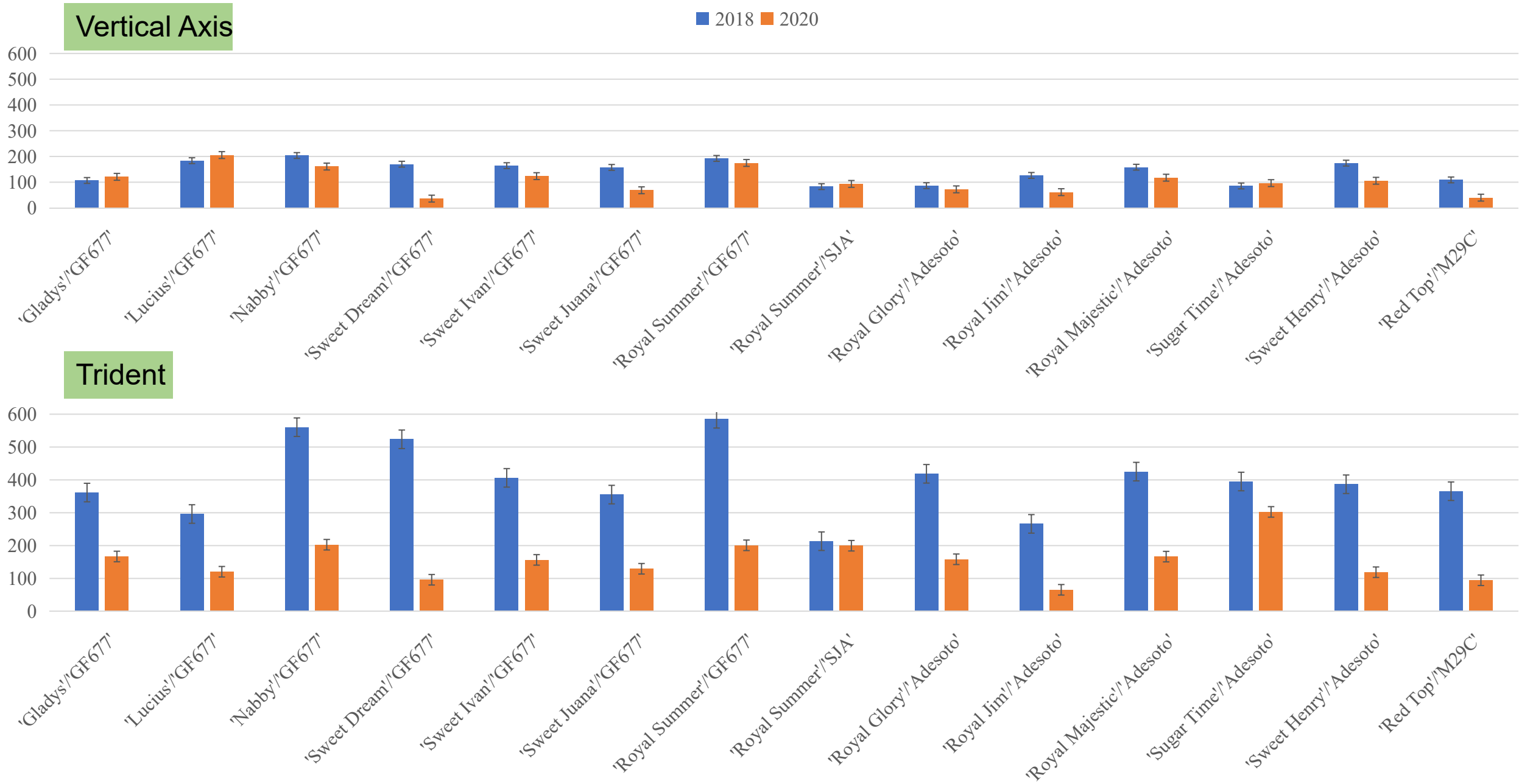
Percentage of proleptic and sylleptic shoots length (%) at nectarine cultivars (2018-2020, Trident)



Total annual growth (m/tree) for peach cultivars (2018-2020)

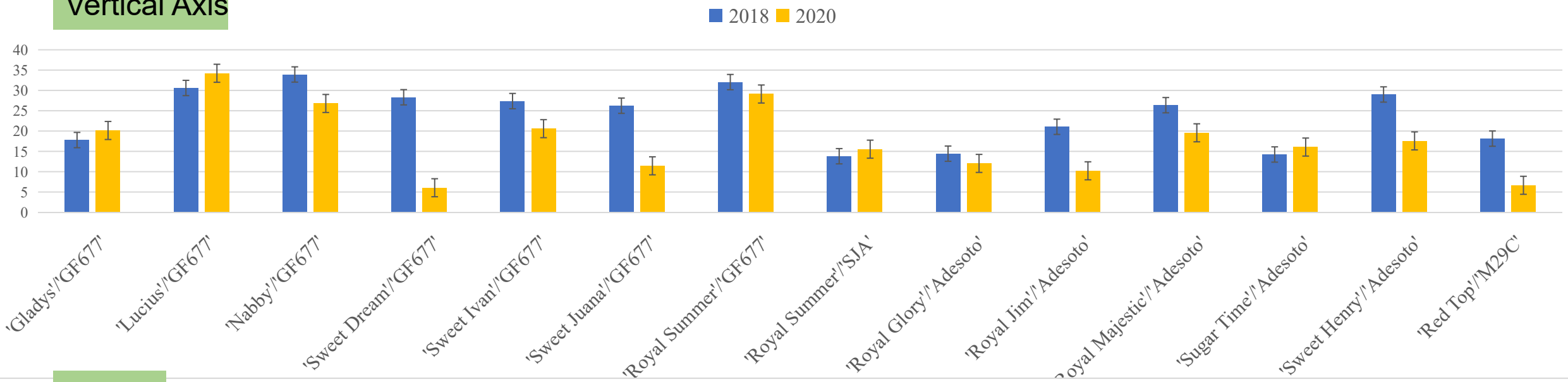


Total annual growth (m/ha) for peach cultivars (2018-2020)

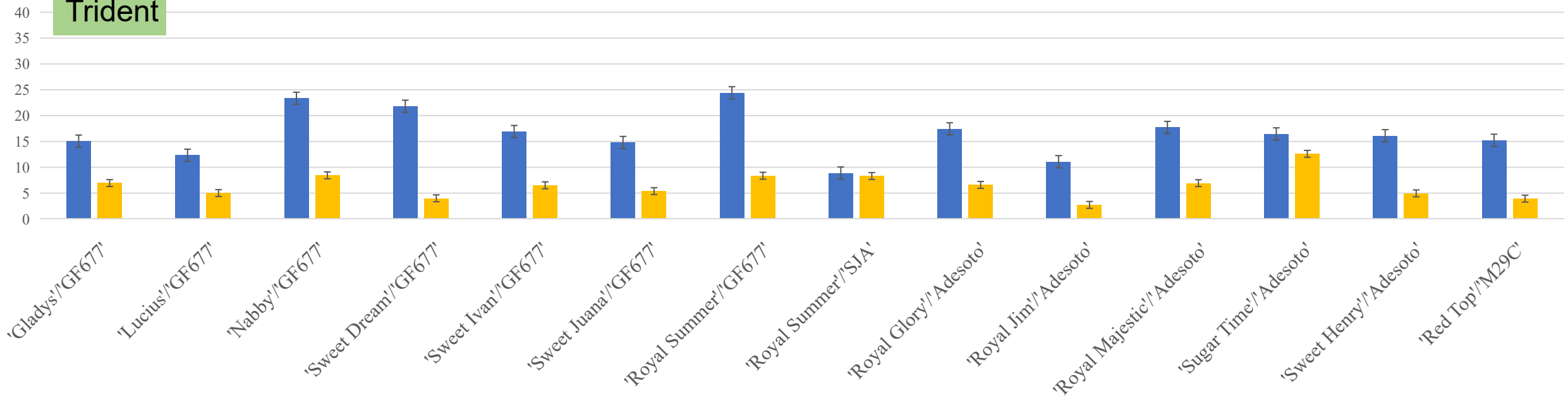


Total annual growth (m/axis) for peach cultivars (2018-2020)

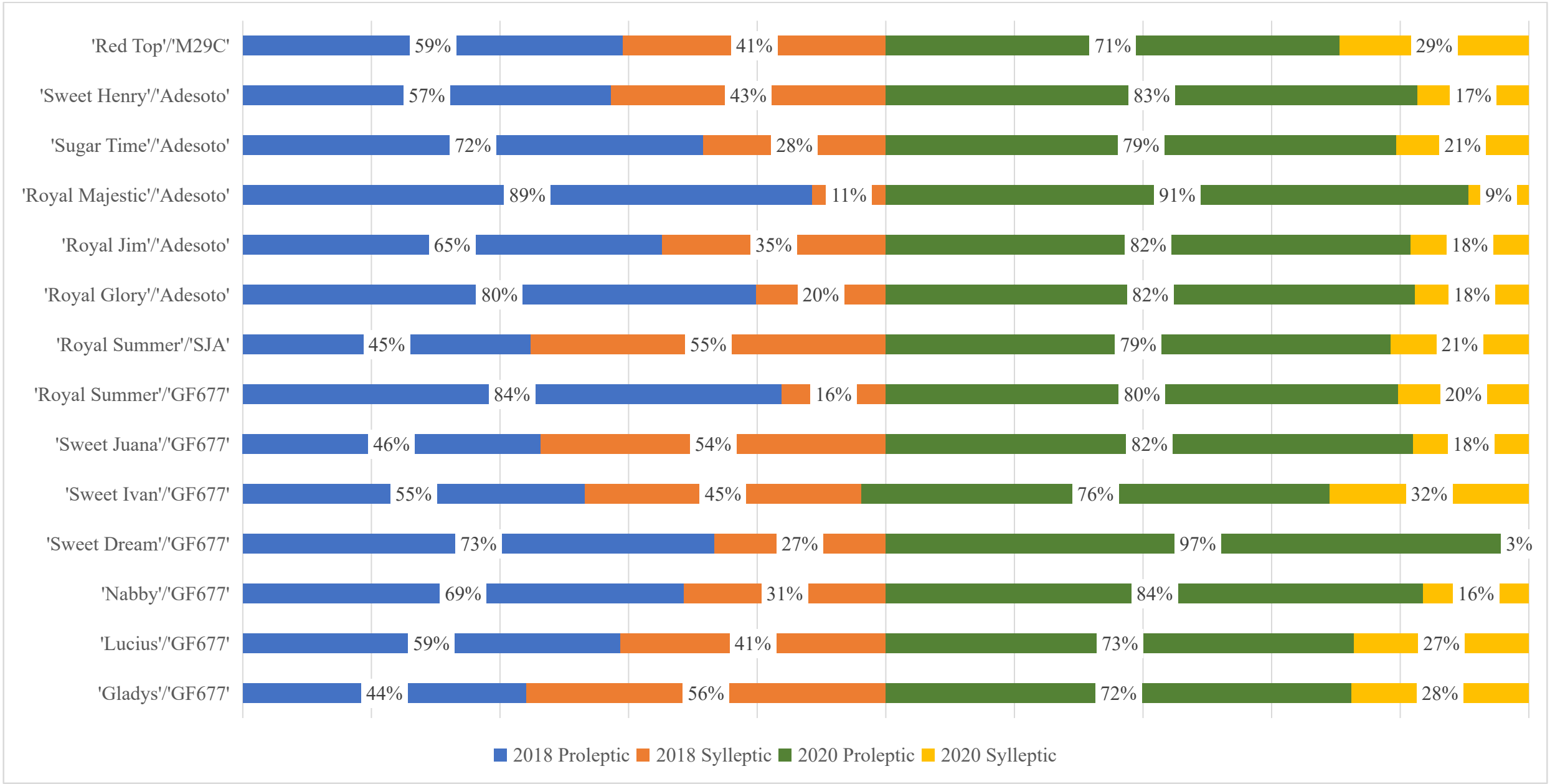
Vertical Axis



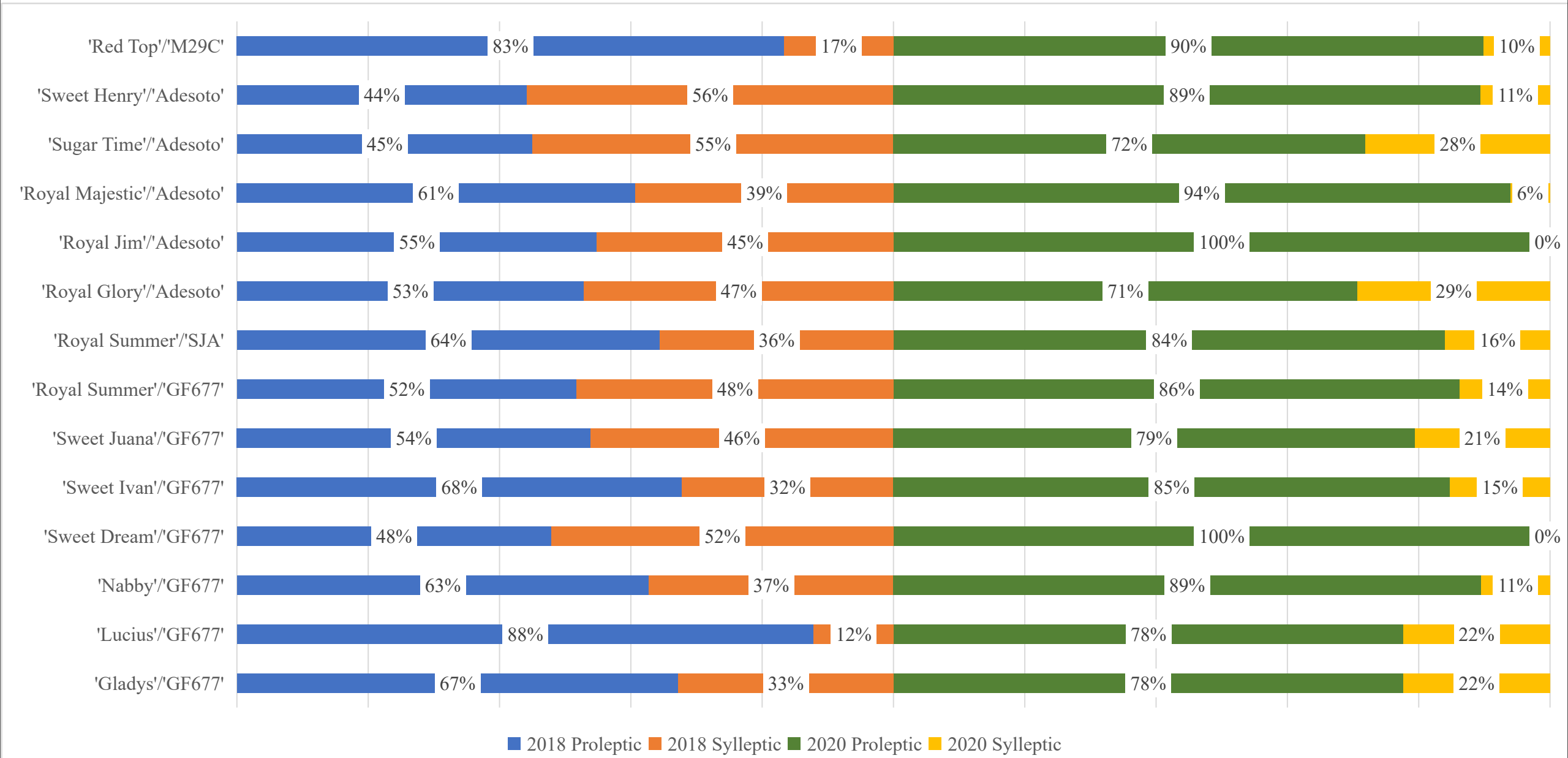
Trident



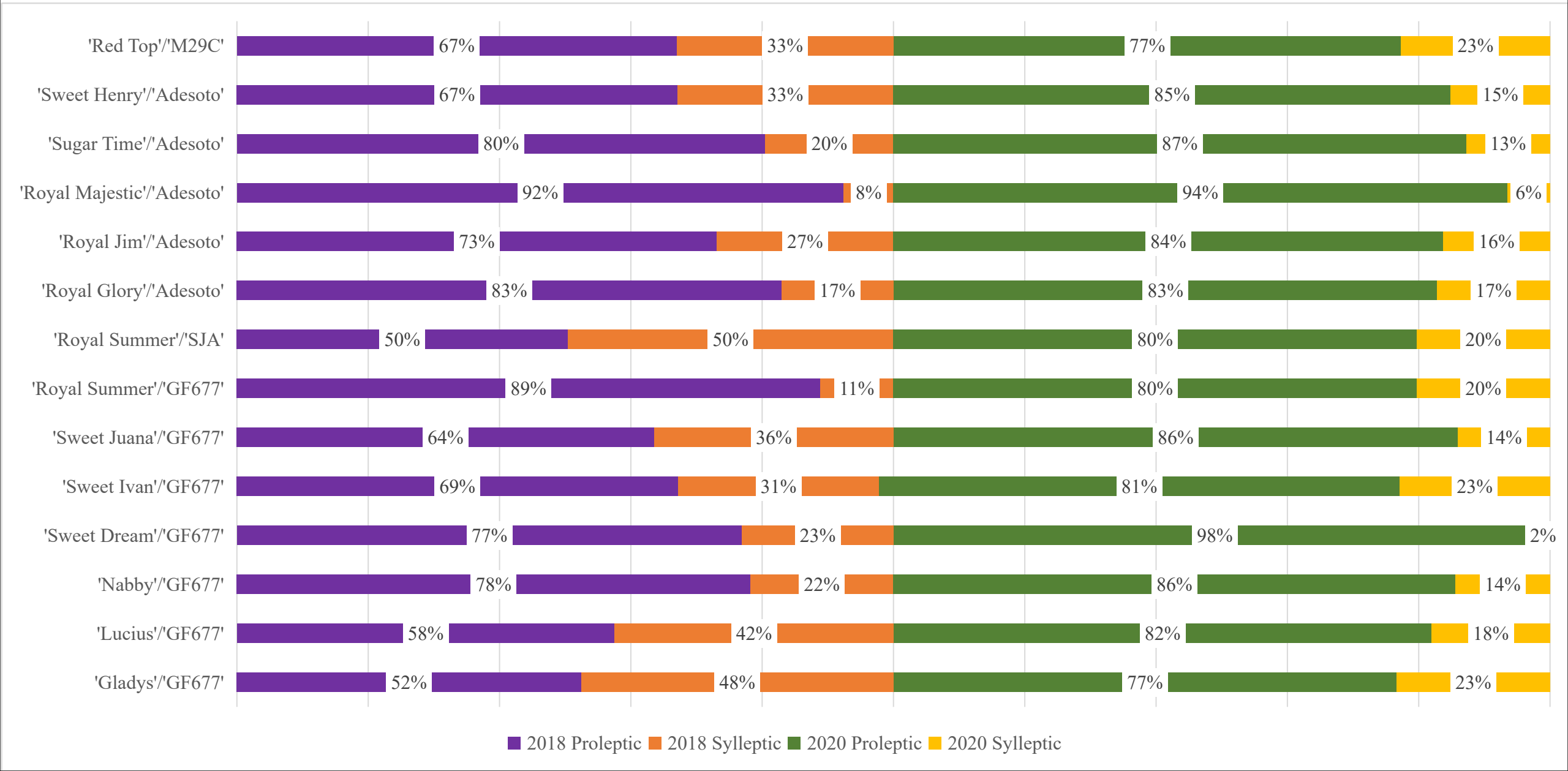
Percentage of proleptic and sylleptic shoots (%) at peach cultivars (2018, 2020 - Vertical Axis)



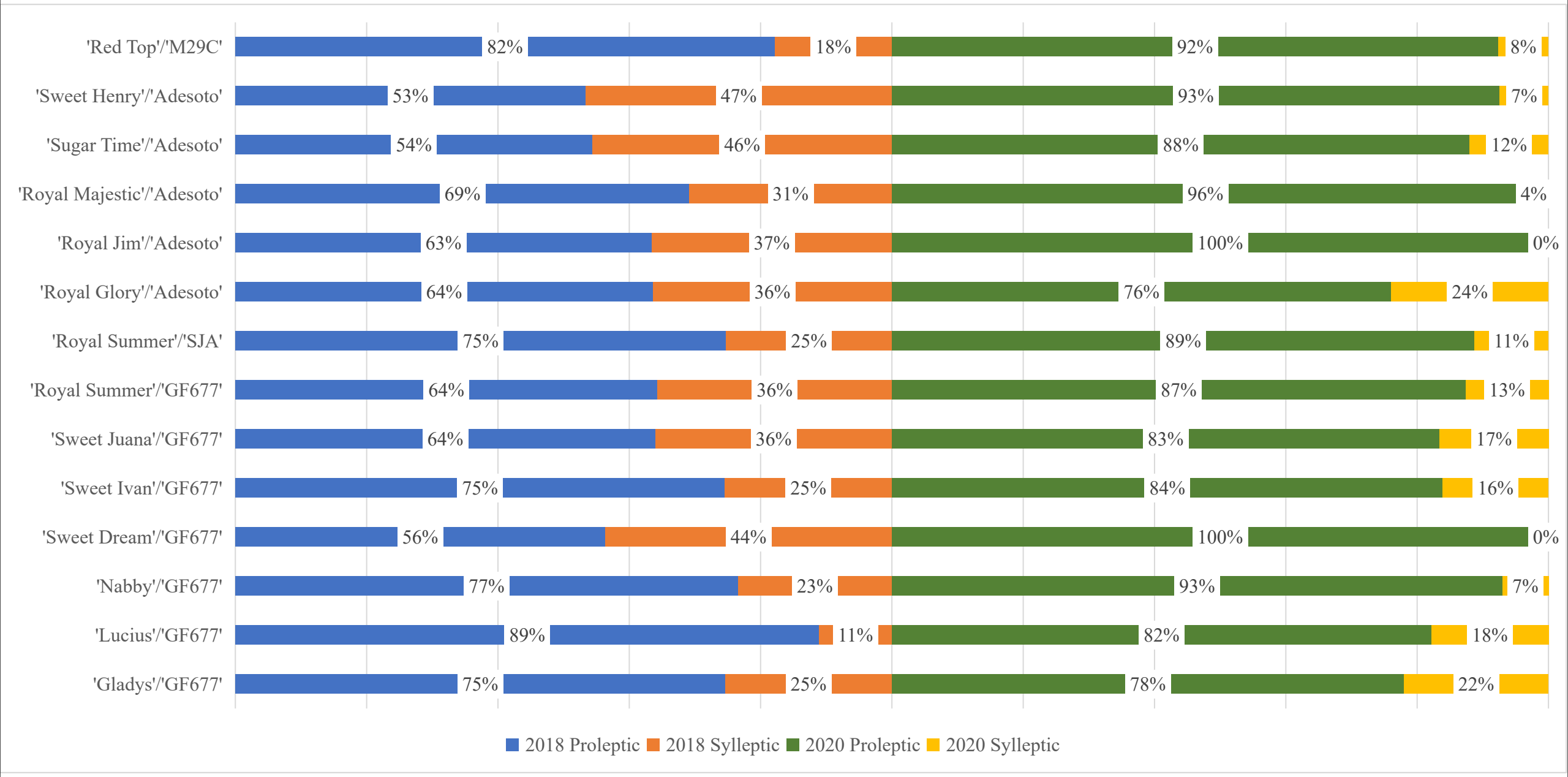
Percentage of proleptic and sylleptic shoots (%) at peach cultivars (2018, 2020 – Trident)



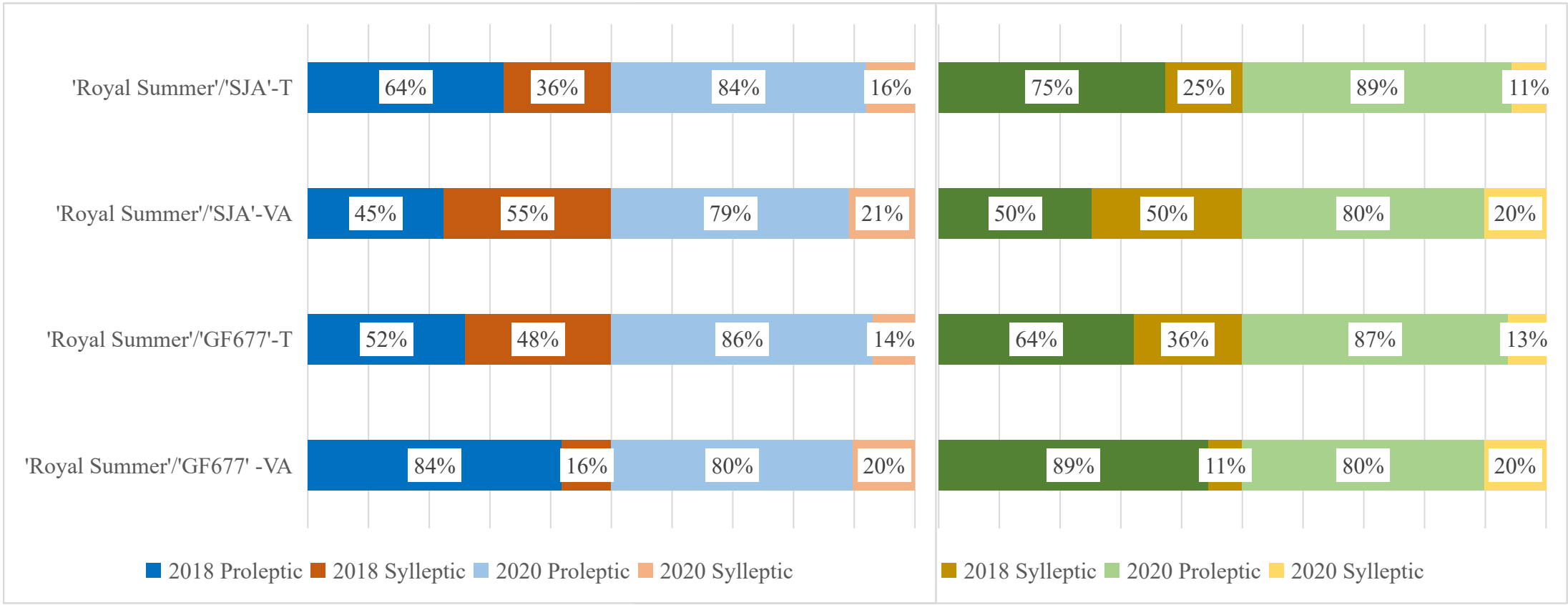
Percentage of proleptic and sylleptic shoots length (%) at peach cultivars (2018, 2020 - Vertical Axis)



Percentage of proleptic and sylleptic shoots length (%) at peach cultivars (2018, 2020 – Trident)



Percentage of proleptic and sylleptic shoots (left) and length (right) (%) at ‘Royal Summer’ on ‘GF677’ and ‘Saint Julien A’ rootstocks (2018 and 2020)



2020 – no significant differences between training systems and rootstock influence on proleptic/sylleptic percentage

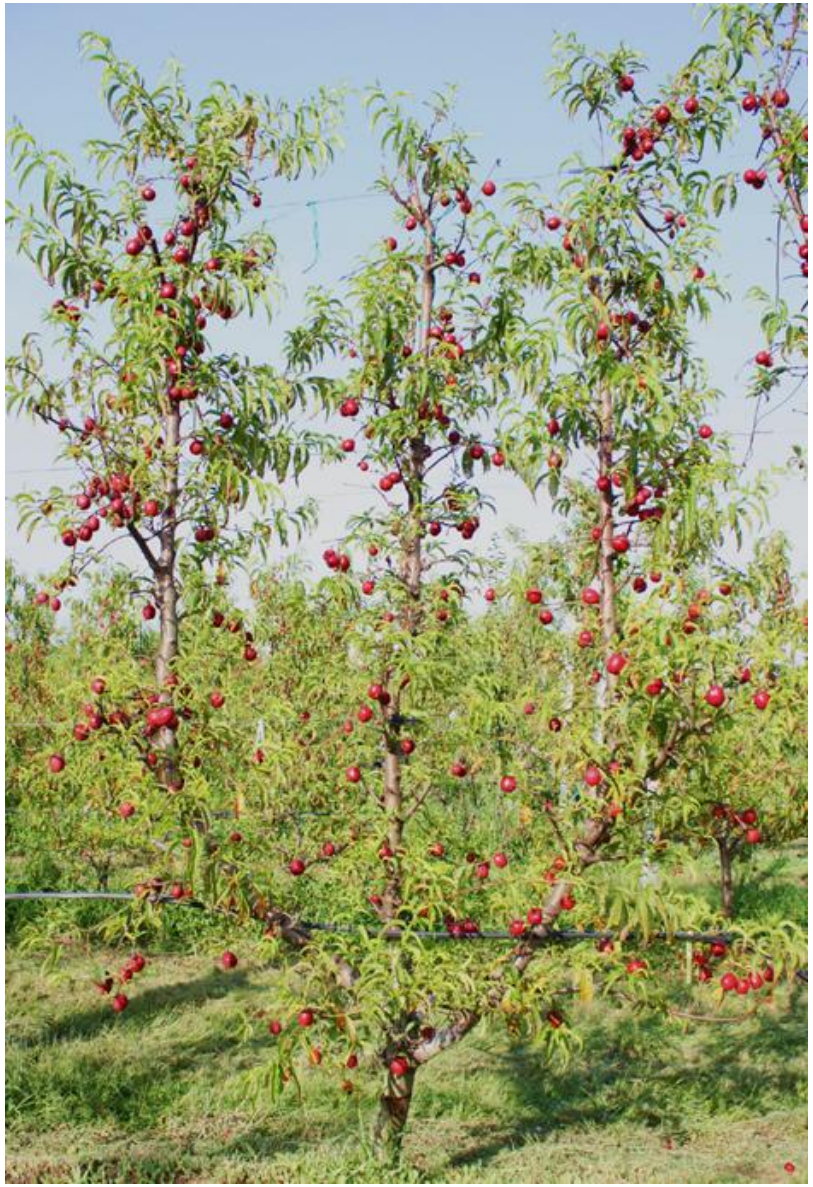
Conclusions

Specific results were analyzed regarding the proleptic and sylleptic shoots, which were distinctive for each cultivar/rootstock combination

The evolution of vegetative growth was influenced by cultivar and by the Vertical Axis and Trident canopy

The obtained results showed significant differences between the two canopies for most of the analyzed parameters

Based on the tree reaction a tailor-made proposal for pruning will be proposed



Conclusions

- The rate of the number and of the length of sylleptic shoots was not influenced by the canopy, but by cultivar and the summer pruning intensity

- Sylleptic shoots can be used successfully for the compensating pruning after winter frost damages

Conclusions

- Trident canopy is more economic as initial investment, by the reduced number of trees per ha
- The vertical space is better used, so the light interception is much better
- The tree vigour is reduced
- Recommended for vigorous cultivar/rootstocks
- The canopy formation is more difficult

Conclusions

The planting system and the canopy is an important source of variation for the growth rate, density of annual branches and tree productivity, but also an import tool to reach the sustainability and the excellency in peach production

Thank you for your kind attention!

Contact:
Phd student Alexandru BUCUR

University of Agronomic Sciences and Veterinary Medicine
Faculty of Horticulture – Bucureşti

Bdul Mărăşti, 59, 011464, Bucureşti - ROMANIA
E-mail: bucuralex1994@gmail.com
Home page: www.usamv.ro